Toxic Secrets

"Inert" Ingredients in Pesticides 1987–1997

Northwest Coalition for
Alternatives to Pesticides

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One in a series of reports by Californians for Pesticide Reform

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Northwest Coalition for Alternatives to Pesticides

Northwest Coalition for Alternatives to Pesticides (NCAP) is a nonprofit, five-state regional organization that promotes sustainable resource management, prevention of pest problems, use of alternatives to pesticides, and the right to be free from pesticide exposure. NCAP strives to substantially reduce or eliminate the use of pesticides as a preferred method of pest control in the Northwest and elsewhere.

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Californians for Pesticide Reform

Californians for Pesticide Reform (CPR) is a coalition of public interest organizations committed to protecting public health and the environment from pesticide proliferation. CPR's mission is to 1) educate Californians about environmental and health risks posed by pesticides; 2) eliminate the use of the most dangerous pesticides and reduce overall pesticide use in California; and 3) hold governmental agencies accountable to protecting public health and Californians' right to know about pesticide use and exposure.

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EXECUTIVE SUMMARY

Most public concern about pesticides is directed at the toxicity, health and environmental impacts of active ingredients, those chemicals you see named on pesticide labels. But the "toxic secrets" of pesticides are what you do not see, the so-called inert ingredients that make up an estimated two times the volume of active ingredients.

"Inert ingredients" (inerts) are chemicals used in pesticide products to make the pesticide more potent or easier to use. Solvents, surfactants, propellants and carriers are some of the kinds of ingredients commonly used as inerts.

Despite their harmless sounding name, so-called inerts include many dangerous chemicals that can cause cancer, reproductive harm, nervous system damage and other health effects. However, their identity remains largely secret to the general public. The U.S. Environmental Protection Agency (EPA) requires that only 0.3 percent of these chemicals be disclosed on pesticide product labels.

In 1987, EPA unveiled a policy designed to "reduce the potential for adverse effects" from the use of the 1200 inert ingredients used in pesticide products at that time and "encourage the use of the least toxic inerts available."

We analyzed the success of EPA's policy and found that:

1. **The number of inert ingredients has almost doubled since 1987, increasing 93 percent from 1200 to 2311 ingredients.** These ingredients are used in approximately 21,000 pesticide products.
2. **Many of the chemicals classified as inerts are hazardous to public and/or environmental health**. More than a quarter (26 percent) of inert ingredients have been identified as hazardous by state, federal or international agencies. These include chemicals that can cause cancer, reproductive effects, harm to the nervous system and damage to the environment.
3. **EPA mandates public disclosure of certain hazardous inert ingredients added to pesticides. This disclosure has helped reduce their use.** Despite this limited success, EPA itself has since remained inert in the true sense of the word, not requiring disclosure of a single new inert ingredient in pesticide products in ten years.

Our analysis shows that manufacturers would rather switch to an alternative ingredient or even discontinue a product line rather than disclose their use of a toxic chemical as an inert ingredient. Use of inerts classified by EPA as "of toxicological concern," for which labeling is required, fell 86 percent, from 57 chemicals in 1987 to eight in 1997. Similarly, the number of products in which they were used fell 97 percent, from 1300 products in 1987 to 40 today.

Based on this evidence, disclosure requirements clearly encourage use of least-toxic ingredients in pesticide formulations. Currently, EPA allows manufacturers to keep secret from the public the identities of more than 99 percent of all ingredients used as inerts.

EPA's opposition to full label disclosure is particularly disturbing given that an estimated four billion pounds of inert ingredients are sprayed each year on the food we eat, and in our homes, schools, parks, forests and communities. According to data from California, the state with the most comprehensive pesticide use reporting system in the country, more than 152 million pounds of inerts were used along with 212 million pounds of active ingredients in 1995, the most recent year for which data is available. However, this figure does not include pesticides used by the general public, since no reporting is required for such use.

Consumers and the general public have the right to know the complete identities of these millions of pounds of secret ingredients to which they are regularly exposed. In this way, they could make educated decisions as to what chemicals they may want to avoid.

NCAP and CPR call for EPA to require that all inerts be identified on the labels of pesticide products, much as all ingredients are identified on such common household items as toothpaste, shampoo and cereal. Label disclosure has been the only effective part of EPA's inerts policy. Without full disclosure, public and environmental health will continue to be threatened.

1. Just What Are "Inert" Ingredients?

Our national pesticide law, the Federal Insecticide, Fungicide and Rodenticide Act of 1972 (FIFRA), classifies pesticide ingredients into two categories, "active" and "inert." Active ingredients are designed to "destroy, prevent, repel, or mitigate" a pest. Inert ingredients (inerts) are all other ingredients used in pesticide products and are added to active ingredients to make the pesticide more potent or easier to use. Literally, they include solvents, spreaders, stickers, wetting agents, carriers, fillers, and other chemicals.

There are approximately 21,000 pesticide products on the U.S. market today containing these active and inert ingredients (EPA 1997b).

Labeling Is Not Required for Inerts

For decades, EPA has allowed pesticide manufacturers to claim that the identity of most inert ingredients is "proprietary information" and confidential from the public (NCAP 1994).

However, in 1996, NCAP and the National Coalition Against the Misuse of Pesticides (NCAMP) successfully sued EPA to force disclosure of the chemicals. While individuals can now receive information on the identity of inerts in pesticide formulations, obtaining the data is a long and cumbersome process and consequently the data remains unknown to the public at large. As a result, the identities of about 2300 ingredients used today as inerts chemicals in more than 21,000 pesticide products (EPA 1997b) continue to be secret from everyone but EPA, pesticide manufacturers and a few individuals who have requested the data.

Despite the change in access to information brought about by the lawsuit, EPA is still unwilling to push for full disclosure. Just last year, EPA would only go so far as to notify manufacturers that they could use the term "other ingredients" on their product label rather than the term "inert ingredients," if they wished (EPA 1997c). However, the new policy does little for disclosure — the actual names of those "other ingredients" remain secret.

Inerts Can Hurt

Use of the term inert is often misleading. For example, some inerts currently used today are known to cause cancer, genetic damage, harm the nervous system, and disrupt hormone systems, among other effects. (See Table 1.)

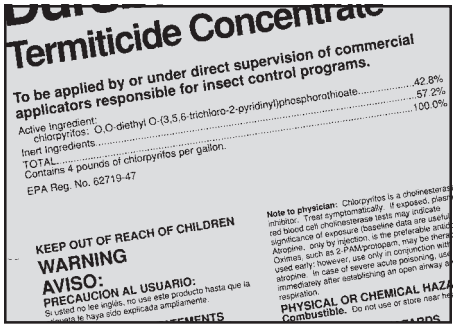
Table 1
Examples of Hazardous Inerts

Inert	Toxicity Concern
o-cresol	causes genetic damage
ethoxylated p-nonylphenol	disrupts hormone systems
ethyl benzene	toxic to the nervous system
naphthalene	causes anemia, jaundice
o-phenylphenol, sodium salt	causes cancer
toluene	causes developmental toxicity
xylene	toxic to the nervous system

Sources: U.S. Dept. of Health and Human Services 1992, 1994, 1995a, 1995b, 1997, White 1994, IARC 1997

Secret Ingredients Are Widely Used

In many cases, the active ingredient labeled on the outside of a pesticide is only a small percent of a total pesticide formulation. The rest, from one percent to as much as 99.9 percent, is made up of secret inert ingredients that, with only a few exceptions, EPA does not require to be labeled.


Termiticide Concentrate

To be applied by or under direct supervision of commercial applicators responsible for insect control programs.

Active Ingredient:
chlorpyrifos: O,O-diethyl O-(3,5,6-trichloro-2-pyridinyl)phosphorothioate..... 42.8%
Inert Ingredients..... 57.2%
TOTAL..... 100.0%
Contains 4 pounds of chlorpyrifos per gallon.
EPA Reg. No. 62719-47

KEEP OUT OF REACH OF CHILDREN
WARNING
AVISO:
PRECAUCION AL USUARIO:
Si usted no lee inglés, no use este producto hasta que la

Note to physician: Chlorpyrifos is a cholinesterase inhibitor. Treat symptomatically. If exposed, plasma or red blood cell cholinesterase tests may indicate significance of exposure (baseline data are useful). Atropine, only by injection, is the preferable antidote. Oximes, such as 2-PAM/pralidoxam, may be therapeutic used early; however, use only in conjunction with atropine. In case of severe acute poisoning, use immediately after establishing an open airway and respiration.
PHYSICAL OR CHEMICAL HAZ
Combustible. Do not use or store near

EPA does not keep records of how many pounds of inert ingredients are used each year in the U.S. The Agency does estimate that approximately two billion pounds of active ingredients are used (1.2 billion pounds of pesticides in agriculture and home use and 0.75 billion pounds of wood preservatives) (EPA 1997b). Using Agency figures showing that active ingredients make up on average 32 percent of a pesticide formulation, NCAP and CPR estimate that 4.1 billion pounds of inert ingredients are used each year in the U.S. (EPA 1982).

Actual figures could be much higher or lower, since agricultural products on average contain a smaller proportion of inert ingredients than homeowner products.

The fact that EPA has no up-to-date estimates of inerts in pesticides used on our food, in our homes, and around our schools highlights the need for state and federal pesticide use reporting that takes into account the use of inert ingredients in pesticide formulations.

2. A History of Secrecy

EPA's Classification of Inerts

List 1—"Inerts of Toxicological Concern"—chemicals the Agency knew caused problems such as cancer, reproductive toxicity, neurotoxicity, damage to the kidney or liver or were acutely toxic to aquatic organisms.

List 2—"Potentially Toxic Inerts/High Priority for Testing."

List 3—"Inerts of Unknown Toxicity," the bulk of all inert ingredients.

List 4—"Minimal Concern." The list was divided in 1989 into two sublists, 4A and 4B. List 4A includes those ingredients EPA believed posed a minimal risk. List 4B includes those ingredients for which EPA has "sufficient information to conclude that their current use patterns will not adversely affect public health and the environment."

The federal government's efforts to regulate inerts in pesticides is characterized by few requirements for public disclosure of the identity of inert ingredients and inconsistent approaches to testing requirements.

Airing Dirty Secrets

The U.S. Department of Agriculture (USDA) took the first step toward disclosure of inert ingredients before EPA was formed in 1972 and took over pesticide registration responsibilities. USDA required that pesticide manufacturers using carbon tetrachloride, petroleum distillates, methanol, or sodium nitrite identify these ingredients on the label due to concerns over their acute effects such as blindness and breathing difficulties (EPA 1998a). EPA confirmed this labeling requirement in 1984 (EPA 1984).

It took another three years for EPA to expand its labeling requirements. In 1987, EPA attempted to categorize inert ingredients according to their toxicity, dividing them into four categories, or "lists." (See "EPA's Classification of Inerts," left.) The chemicals EPA put into Lists 1 and 2 were published in 1987, (EPA 1987) but no identification of the chemicals on the other two lists was made. In 1989, EPA divided List 4 into two lists, List 4A and 4B (EPA 1989). However, the Agency did not actually publish these lists until 1994 (List 4A) and 1995 (List 4B) (EPA 1994, 1995a). The identities of chemicals on List 3 were also first made publicly available in 1995 (EPA 1995b).

In an effort to "reduce the potential for adverse effects" from use of toxic inerts, EPA required that manufacturers using a chemical from List 1, "Inerts of Toxicological Concern," either label its use on the product's panel, or halt its use. No label disclosure was required for inerts on any of the other three lists (EPA 1987).

Public interest groups have worked since the 1980s to end trade secrecy claims for inert ingredients by using the Freedom of Information Act (FOIA). This work culminated in a 1996 victory in a lawsuit filed against the EPA by NCAP and NCAMP. The organizations showed that manufacturers often "reverse engineer" their competitors' products in laboratories to determine the contents, leaving only the public in the dark (NCAP 1994). The court ruled that inert ingredients are not protected by the FOIA exemption that prohibits disclosure of trade secrets. The only valid protection from disclosure comes if, on a case by case basis, manufacturers are able to prove competitive harm will result from disclosing the identities of inert ingredients used in a formulated product (941 F. Supp. 197).

Inerts Testing Requirements Are Inconsistent and Inadequate

When EPA announced its inerts labeling policy in 1987, it also established testing requirements for the various ingredients. However, the proposal was flawed and inconsistent from the beginning. "Old" List 1 inerts already in formulations could be subject to testing as substantial as that required for active ingredients if manufacturers chose to continue use of the chemicals. Test requirements for "new" inerts on any list, however, were called "minimal" even by EPA and are only a subset of the data required for active ingredients. For example, no data on the chemicals' ability to cause chronic toxicity, cancer, or reproductive effects were required (EPA 1987).

EPA requires even less testing for potential hazards of the combination of active and inert ingredients, even though this is the chemical cocktail to which humans and the environment are actually exposed when a pesticide is used. Only a handful of studies, covering only short term, acute exposure are required (40 CFR 150.340).

3. FINDINGS

The Number of Inert Ingredients Has Doubled Since 1987

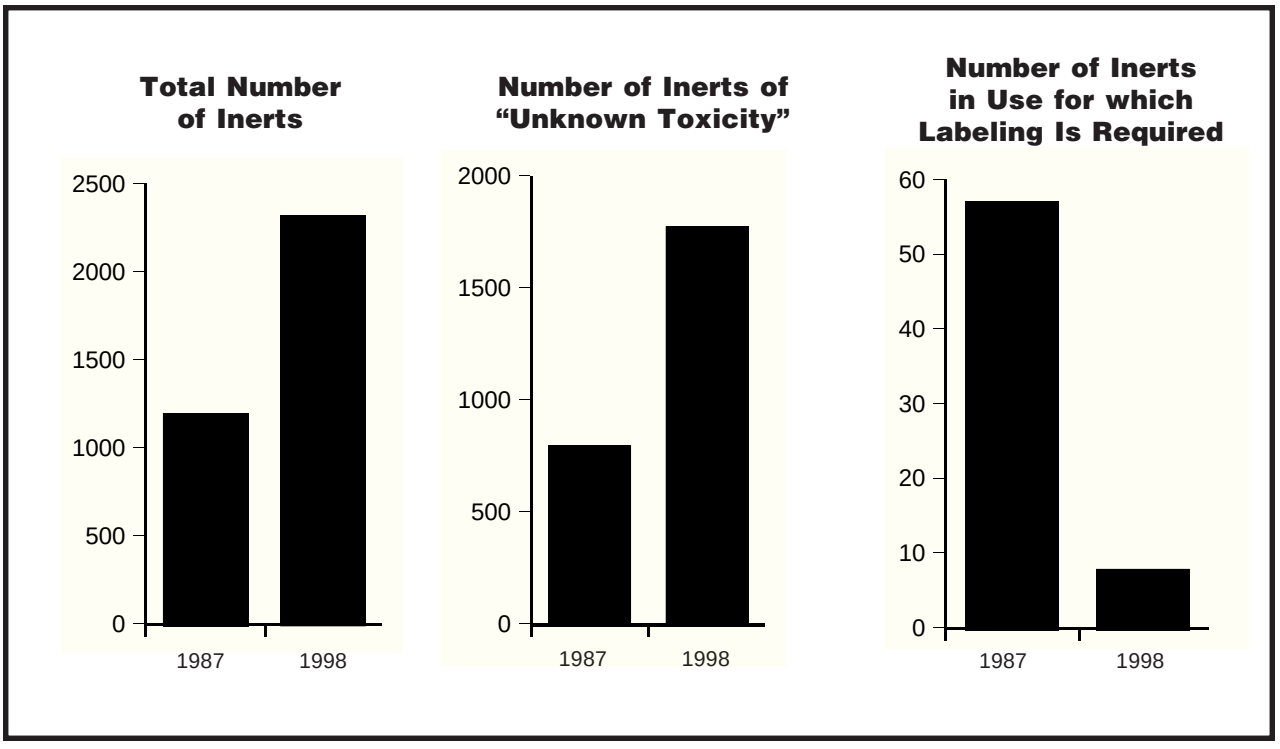
In the eleven years since EPA initiated its inerts labeling and testing policy, the number of inert ingredients used in pesticide products has grown 93 percent, from 1200 to 2311 ingredients.

The rate of increase is greatest for those categories of inerts for which EPA does not require disclosure. In particular, List 3, "Inerts of Unknown Toxicity," made the biggest jump, increasing 122 percent from 800 to 1779 chemicals. This presents a potentially huge public health concern, given that the health effects of almost 75 percent of the chemicals are mysteries, even to the regulators. Lists 4A and 4B, "Minimal Risk Inerts," grew from 300 to 429 chemicals, a 43 percent increase. We were unable to determine whether the number of chemicals in List 2, "Potentially Toxic Inerts," increased or decreased due to discrepancies in EPA data. (See Appendix A for details.)

The list demonstrating the most substantial reduction is List 1, "Inerts of Toxicological Concern," the list for which labeling is required. The number of chemicals on this list fell 86 percent from 57 to eight. When given the option of labeling their use of a toxic chemical or switching to an alternative ingredient, many manufacturers chose to switch.

Despite the inroads the labeling requirement has made toward reducing the number of inert ingredients on the market, EPA has not added a single chemical to List 1 since 1987 nor required labeling for any additional inert ingredients. If it had, it is likely we would have seen greater reductions in the use of toxic chemicals.

The fact that EPA permits the use of pesticides containing inerts of unknown toxicity demonstrates a fundamental flaw in public policy. Billions of pounds of these mystery chemicals are currently permitted to be sprayed on the food we eat, and in our homes, hospitals, schools, parks, forests, and on our lawns.



Over a Quarter of All Inerts Are Already Known To Be Toxic

Although there is much we do not know about the health effects of three-quarters of inert ingredients, we do know that government agencies already recognize that 26 percent of inerts are actually chemically, biologically, or toxicologically active. These chemicals are able to cause cancer, reproductive and nervous system harm, and other health and environmental problems.

According to our research, EPA or other state, federal, and international agencies have enough information on 610 of the 2311 chemicals to classify them as hazardous under several statutes. (See Appendix A for details.) Yet the Agency itself has chosen to remain inert, in the true sense of the word, failing to require disclosure of these chemicals as required by law.

For example, state, federal, and international agencies have listed 20 inerts as known or suspected carcinogens. EPA considers twelve to be "extremely hazardous" under the Superfund hazardous waste law. Seventy-five of these chemicals are classified as toxic under the regulations establishing the Toxic Release Inventory program. EPA considers another 187 inerts to be hazardous air and water pollutants under the Clean Air, Clean Water, or Safe Drinking Water Acts. The Occupational Safety and Health Administration regards 118 as occupational hazards. (See Table 2 for examples, and Appendix B for complete lists of these chemicals.)

Many of these chemicals have languished, some for years, on List 3, "Inerts of Unknown Toxicity," despite the public availability of information on their toxicity. For example, the International Agency for Research on Cancer determined nine inerts were possible or probable carcinogens in 1987, (IARC 1997) the same year EPA published its inerts policy. Eleven years later, EPA has not classified them "as of toxicological concern."

Table 2
Examples of Hazardous Inerts Classified by EPA as "of Unknown Toxicity"

Carcinogens: cristobalite; o-phenylphenol, sodium salt; FD&C Violet No. 1; butylated hydroxyanisole, safrole

Hazardous under the Superfund Amendments and Reauthorization Act: cumene, cyclohexanol, methyl ethyl ketone, sodium nitrite, triethylamine

Occupational Hazards: vinyl toluene, isopropylamine, chloropicrin, naphthalene, tetrachloroethane

Air and Water Pollutants: ammonium thiocyanate, chlorotoluene, dodecylphenol, mononchloroacetic acid, tetramethylbutyl phenol

Active Ingredients Masquerade as Inerts

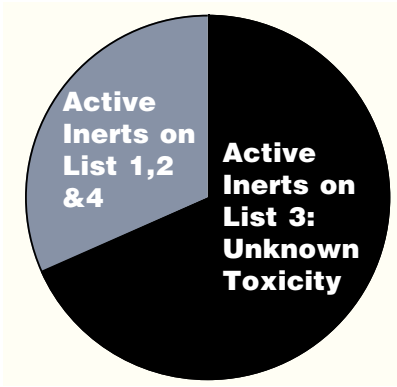
At least 366 inert ingredients, or 16 percent of the total number of inerts, have been or are currently used as active ingredients in pesticides. Of these "active inerts," two are on List 1, "Inerts of Toxicological Concern," while 28 are on List 2, "Potentially Toxic Inerts." These include toluene and xylene, chemicals the federal Agency for Toxic Substances and Disease Registry considers toxic to the fetus and nervous system, respectively (U.S. Dept. Health and Human Services 1994, 1995b).

Approximately 250 active inerts, or 68 percent of the total number of active inerts, are hidden on List 3, "Inerts of Unknown Toxicity." Of the remaining 86, ten are on List 4A and 76 on List 4B.

Ironically, when used as an active ingredient, the name of the chemical must be disclosed on the label and the chemical is subject to a full battery of tests to determine its toxicity. However, when the same chemical is used as an inert ingredient, no such labeling and only limited studies are required.

In other words, a chemical with known pesticidal properties can be used as an active ingredient or an inert and it will be regulated according to its designation (as an active or inert) rather than according to its toxicity. The distinction between active and inert is not only misleading, it is also arbitrary and the resulting regulatory distinctions are illogical.

366 "Active Inerts"



Almost 70 percent of the inert ingredients that are or have been used as active ingredients are classified by EPA as "of unknown toxicity."

Disclosure Helps Reduce the Use of Toxic Inerts

Our analysis of EPA data shows the Agency's 1987 disclosure policy has resulted in reducing the use of what EPA determined to be the most hazardous chemicals. Giving consumers the right-to-know which hazardous chemical was in a pesticide meant many manufacturers chose to drop the List 1 "Inerts of toxicological concern" from their product lines. As a result, the number of List 1 inert ingredients in use fell from 57 in 1987 to eight in 1997, an 86 percent reduction. The number of products containing a List 1 inert dropped from approximately 1300 products in 1987 to 40 in 1997, a 97 percent reduction (EPA 1987, 1996).

Says Scott Baker of Loveland Industries, which dropped the use of the cancer-causing red dye Rhodamine B from their pesticide products in 1990, "How many people want to jump up and defend a carcinogen? Most people found something else, maybe not as red, but not as hazardous" (Loveland Industries 1997).

"How many people want to jump up and defend a carcinogen?"

—Scott Baker, Loveland Industries

Some Companies Continue Use of Toxic Inerts

The labeling policy is not completely effective. At least eleven manufacturers continue to use seven of the eight List 1 "Inerts of Toxicological Concern." These include four chemicals that can cause cancer in laboratory animals, two chemicals that are acutely toxic to aquatic organisms (one of which bioaccumulates) and one that can harm the nervous system as well as the liver and kidneys. (See Table 3.)

These seven chemicals are found today in at least 40 pesticide products, ranging from herbicides used on rice, soybeans and wheat, to aquatic herbicides used in bodies of water, and red dye added to fungicides used to protect seeds from disease. (See Table 4.)

Four of these chemicals (DEHA, DEHP, nonylphenol, and phenol) remain in use while companies challenge their inclusion on the list (EPA 1997d).

Table 3
Currently Used Inerts "of Toxicological Concern"

Inert	EPA Concern
di-2-ethylhexyladipate (DEHA/DOA)	carcinogen
di-2-ethylhexylphthalate (DEHP/DOP)	carcinogen
hydroquinone	acute toxicity to aquatic organisms
isophorone	carcinogen
nonylphenol	acutely toxic to fish, bioaccumulates
phenol	neurotoxic, liver and kidney damage
Rhodamine B	carcinogen

Sources: EPA 1985, 1996, 1997a

We were unable to determine whether the manufacturers that dropped a List 1 "Inert of Toxicological Concern" actually switched to a less toxic chemical, or merely began using another toxic chemical that EPA has failed to move onto List 1.

Labeling of Other Household Products Is More Complete

Label disclosure and consumers' right-to-know is already in place for a large number of consumer products on the market. In addition to processed foods such as baby food, crackers and cereal, labeling is required for such other common household items as shampoo, toothpaste, and hand cream. In the meantime, toxic chemicals in pesticides remain secret, shielded by the term "inert."

In January 1998, NCAP and the attorneys general of seven states and the territory of Guam petitioned EPA to require disclosure of all ingredients in pesticide formulations (Petition 1998). At press time, EPA had yet to make any policy changes in response.

Table 4
Companies Still Using List 1 Inert Ingredients

Company	Number of products	Types of products (and inert ingredient used)
AgrEvo Wilmington, DE	3	herbicides used on beets, sugar beets, and spinach (isophorone—carcinogen)
Baker Petrolite Bakersfield, CA	2	aquatic herbicide (hydroquinone—acutely toxic to aquatic organisms)
Boehring Ingelheim St. Joseph, MO	3	cattle ear tags/horse neckband for flies livestock, poultry, and premise insecticide (phenol—carcinogen)
Gustafson/Uniroyal Dallas, TX/ Middlebury, CT	6	seed treatment for alfalfa and wheat (Rhodamine B—carcinogen)
Morton International North Andover, MA	15	wood preservatives (nonylphenol—acutely toxic to fish, bioaccumulates)* (DEHP - carcinogen)
PM Resources Bridgeton, MO	1	insecticide for livestock/poultry (phenol—carcinogen)
Riceco** Memphis, TN	4	herbicide used on rice (isophorone—carcinogen)
Rohm and Haas Philadelphia, PA	1	herbicide used on rice (isophorone—carcinogen)
Roxide International New Rochelle, NY	1	insect strip (DEHA—carcinogen)
Trace Chemicals Pekin, IL	3	seed treatment for corn and soybeans (Rhodamine B—carcinogen)
Wilbur Ellis Fresno, CA	1	seed treatment for numerous crops (Rhodamine B—carcinogen)

Note: In some cases, companies may have fewer products on the market containing a List 1 "Inert of Toxicological Concern," but refused to provide the authors with information.

* 1996 EPA data provided to the authors under FOIA showed that Morton only used nonylphenol. However, the California Department of Pesticide Regulation sent the authors a 1989 label indicating the use of DEHP (a carcinogen), information not in EPA's data. (Morton refused to send the authors any labels.)

** Riceco is a combination of Westrade in Houston, TX and Cedar Chemicals in Memphis, TN. The company is currently in discussions with EPA as to whether to continue use of isophorone in their products (EPA 1998b).

4. USE OF INERTS IN CALIFORNIA

California has a unique mandatory pesticide use reporting system that covers all agricultural pesticide use and pesticide use by licensed pest control applicators. Based on reports generated by this system, the California Public Interest Research Group (CALPIRG) Charitable Trust and other member organizations of Californians for Pesticide Reform (CPR) have developed a profile of the use of inert ingredients used in California.

According to the data, over 152 million pounds of inert ingredients were used in California in 1995, the most recent year for which information is available.

Although inert ingredients are used throughout the state, reported use indicates the heaviest concentration of agricultural pesticide use in particular counties. For example, the top two pesticide-using counties alone (Fresno and Kern) make up more than 30 percent of the estimated total of inert ingredient use, and the top ten account for more than 65 percent.

But use of inert ingredients is not limited to the agricultural sector. Three of the top 15 types of applications, amounting to 15.6 million pounds of inerts, are non-agricultural—structural pest control, landscape maintenance and rights-of-way.

Unfortunately, the organizations were unable to determine the actual identities of the inerts used in the pesticide formulations. The Department of Pesticide Regulation does not keep records in its database of the names of inerts used in the pesticide formulations in the state, only the percent of a formulation the total amount of inerts make up.

While the California pesticide use reporting system is the one of the most comprehensive in the country, it has several fundamental flaws. Perhaps the biggest is that it does not monitor or require reporting of the sales of over-the-counter pesticide products which make up roughly 20 percent of pesticide use in the state (Robinson 1994). Therefore, the figures represent an underestimate of the scope of pesticide use.

Table 5
Top Use of Pesticide Inert Ingredients In California

By County

County	Millions of Pounds Used
Fresno	25.3
Kern	21.5
Tulare	9.7
Imperial	9.3
Kings	8.5
Merced	6.0
Colusa	5.8
Butte	4.7
Sutter	4.7
Riverside	4.7

By Type of Use

Type of Use	Millions of Pounds Used
Cotton	32.9
Rice	17.8
Grapes	10.3
Tomatoes	9.5
Alfalfa	8.6
Carrots	8.2
Structural Pest Control	6.5
Almonds	5.9
Landscape Maintenance	5.7
Oranges	3.9
Rights-Of-Way	3.4
Potatoes	3.1
Lettuce	3.0
Walnuts	2.7
Broccoli	1.7

* For a full list of counties and type of use, see Appendix C.

5. RECOMMENDATIONS

Our findings show that use of misleadingly named inert ingredients has doubled over the last 10 years, and that 26 percent of these chemicals have been recognized as toxic by state, federal, and international agencies. Few are required to be labeled. EPA is permitting the use of more and more chemicals whose health effects are unknown to the Agency, the public, and possibly even the manufacturer.

Despite its 1987 objective of "encouraging the use of least toxic inert ingredients," EPA itself seems inert when it comes to taking any action to further wean chemical companies off the use of toxic inert ingredients. The Agency has chosen to ignore publicly available information indicating the toxicity of numerous chemicals in favor of a policy based on inertia, disinterest, and secrecy. It has opposed disclosure of more than a handful of inerts and has failed to take action to move chemicals onto the list of inerts for which disclosure is required.

Given that most pesticide formulations are often reverse engineered in laboratories by competing companies, the actual identities of formulations remain a secret only to the public. This inequity puts the public the most at risk, and the most in the dark.

The public has a right to know the identity of the chemicals to which they may be exposed. It is ironic that as consumers we are told what ingredients are in our cereals, crackers and even shampoos, but not what potentially toxic chemicals are in pesticide products to which we are also exposed on a daily basis.

Disclosure of toxic inert ingredients has been the only part of EPA's inerts policy to have resulted in a reduction of the use of toxic chemicals. As a result, NCAP and CPR call for EPA to require manufacturers to list all inert ingredients on the labels of pesticide products. Disclosure of all inerts could reduce the public's exposure to toxic chemicals while the marketplace quickly decides to put in place alternatives.

The public has trusted EPA to take action for the last ten years to reduce the threat from inert ingredients. But public health and the health of our environment can no longer continue to be threatened while EPA remains inert itself, loathe to take action. It is critical that EPA act as soon as possible to require manufacturers to disclose all ingredients in pesticides.

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APPENDIX A: METHODOLOGY

Gathering Names

In 1996, we submitted a Freedom of Information Act (FOIA) request to EPA to obtain the names of pesticide products on the market that included chemicals the Agency had designated as List 1, "Inerts of Toxicological Concern." Because the Agency's 1987 policy on inert ingredients requires that manufacturers include on the pesticide product label the name of the inert ingredient if it is on List 1, such information is considered public.

With the help of the American Crop Protection Association and the Chemical Manufacturers Association, we were able to contact each manufacturer included in EPA's response to our FOIA request. We asked whether they continued to use the particular List 1 inert ingredient(s) in their products and attained the most recent label to determine compliance with the 1987 labeling requirements (AgrEvo1997; Amvac 1997; Baker Petrolite 1997; Boehringer Ingelheim 1997; Cedar Chemical Corporation 1997; Gustafson/Uniroyal 1997; Loveland Industries 1997; Morton International, Inc. 1997; PM Resources 1997; Rohm and Haas Co. 1997; Roxide International 1997; Trace Chemicals 1997; Westrade, USA, Inc. 1997; Wilbur Ellis 1997; Zema Corporation 1997). Since Cedar Chemical and Morton International refused to provide us with labels, we were forced to obtain the labels from the California Department of Pesticide Regulation and EPA, respectively.

Once we had the manufacturers' information, we cross-checked our findings against EPA's most current data and labels. Where there was a difference of information, we would contact both EPA and the company to try to resolve the discrepancy. However, in some cases, companies would not comply; while EPA did take at least one step towards enforcement by telling one company about the labeling requirement, it was unable to complete its response to our several questions over a seven month period.

EPA still lists formaldehyde on its soon to be published list of inert ingredients and believes the chemical could still be used in as many as 52 products (EPA 1998c). However, EPA did not provide NCAP with any information about formaldehyde. EPA stated it would regulate formaldehyde as an active ingredient as far back as its 1987 policy announcement, but has yet to take the chemical off the list of List 1 inerts.

Determining Poundage

To determine the pounds of inerts used in the U.S. we contacted several people at EPA, to find the most recent estimate was from 1982 (EPA 1982). At that time, EPA estimated that approximately one-third, 32 percent, of a pesticide formulation was made up of active ingredients. The Agency currently estimates that there are 1.2 billion pounds of "conventional" pesticides and 725 million pounds of wood preservatives used each year in the U.S. for a total of two billion pounds (EPA 1997b). If these active ingredients represent 32 percent of the average product, about four billion pounds of inert ingredients are used each year.

The Numbers Game

We calculated the number of inert ingredients used in pesticide products based on the 1995 list of inert ingredients compiled by EPA (EPA 1995b). The list was updated by deleting inert ingredients identified by EPA in 1998 as no longer in use (EPA 1998d). For List 2 inerts, we were able to compare the information obtained by this deletion process with a list of List 2 inerts that EPA plans to publish soon (EPA 1998d). Because of the large number of discrepancies between the two sources of data, we were unable to finalize the number of List 2 inerts.

Hazardous Inerts

We determined which inert ingredients have been identified as hazardous by state, federal, and international agencies. We took lists of hazardous chemicals compiled by these agencies and checked (using the Chemical Abstracts Service number) to see which inert ingredients were found on each list. The following statutes and agency lists were used: Clean Air Act—CAA109 (national ambient air quality standards), CAA 111 (standards of performance for new stationary sources of air pollutants); CAA 112B (national emission standards for hazardous air pollutants); CAA 112R (regulated toxic, explosive, or flammable substances); CAA 202A (motor vehicle emission and fuel standards); Comprehensive Environmental Response, Compensation, and Liability Act—CERCLA hazardous substances; Clean Water Act—CWA 304 B (effluent limitations guidelines); CWA 307A (toxic pollutants); CWA 311 (hazardous substances); CWA priority (priority pollutants); Federal Insecticide, Fungicide, and Rodenticide Act (active ingredients of registered pesticides); PARA-4C (pretreatment pollutants); Resource Conservation and Recovery Act—RCRA 3 (characteristics of hazardous waste: ignitability, reactivity, and corrosivity); RCRA F (hazardous wastes from nonspecific sources); RCRA K (hazardous wastes from specific sources); RCRA P (acutely hazardous discarded commercial chemical products); RCRA T (characteristics of hazardous waste: toxicity characteristic); RCRA U (other discarded commercial chemical products); Superfund Amendments and Reauthorization Act—SARA 110 (superfund site priority contaminants); SARA 302A (extremely hazardous substances); SARA 313 (toxic chemicals); Safe Drinking Water Act—SDWA NPDWR (national primary drinking water regulations); SDWA NSDWR (national secondary drinking water regulations); Toxic Substances Control Act—TSCA 5A SNUR (chemicals subject to significant new use rules); TSCA 6A CCCR (commercial chemical control rules); TSCA 8A CAIR (comprehensive assessment information rules); TSCA 8A INFO (toxic substances subject to information rules on production quantities, uses, exposures, and adverse effects); TSCA PAIR (preliminary assessment information rules); TSCA SARS (records of allegations of significant adverse reactions notices and rules); TSCSA HSDR (health and safety data reporting rules); TSCA 8D TERM (health and safety data reporting rule terminations); TSCA MTL (master testing list); Appendix C (analytes listed in appendix C of consent decree [NRDC v. USEPA, 1976]); U.S. EPA. Office of Pesticide Programs, Chemical Ingredients Database, maintained by Calif. EPA Dept. of Pesticide Regulation: http://www.cdpr.ca.gov/docs/epa/epamenu.html, U.S. EPA, 1995; Ozone-depleting substances http://www.epa.gov/ozone/title6/sec602.html; U.S. Department of Health and Human Services, National Toxicology Program, 1994. *Seventh Annual Report on Carcinogens*. Washington, D.C.; Calif. EPA. Office of Environmental Health Hazard Assessment, 1996, Safe Drinking Water and Toxic Enforcement Act of 1986, "Chemicals known to the state to cause cancer or reproductive toxicity:" http://www.cahwet.gov/epa/oehha/docs/9-961stb.htm; International Agency for Research on Cancer, 1997, *IARC Monographs, vols. 1-69*. Lyon, France: IARC.

California Data

In order to determine the amounts of inerts used in pesticide products in California, the California Public Interest Research Group (CALPIRG) Charitable Trust analyzed state pesticide use reporting data for 1995, the most recent year for which data is available.

The pesticide reporting system upon which these figures are based is widely considered to be the most comprehensive in the nation and even the world. Pesticide use in California is reported monthly to the California Department of Pesticide Regulation. Reported pesticide use includes agricultural use and most applications by commercial pest control operators. Reported pesticide use does not include the use of over-the-counter products or some industrial and institutional uses—estimated to comprise about 20 percent of total California pesticide use. Thus these estimates substantially underestimate actual use and release of inert ingredients in this state.

While not reported independently, use of inert ingredients can be quantified in aggregate by subtracting pounds of active ingredient applied from pounds of product applied. Note that for some applications, more than one data record includes the pounds of product applied for a single application. This is because some products contain more than one active ingredient and each active ingredient is reported in its own record. Thus the pounds of product applied is reported in the database for each active ingredient. We eliminated duplicates to avoid overestimating product use.

Appendix B: Inerts Known to Be Hazardous

Inert Ingredients Listed as Carcinogens by the International Agency for Research on Carcinogens, the National Toxicology Program, and California's Proposition 65.

LIST 1	
50-00-0	Formaldehyde
LIST 2	
75-00-3	Chloroethane
LIST 3	
139-13-9	Aminotriethanoic acid
1309-64-4	Antimony trioxide
8052-42-4	Asphalt
25013-16-5	Butylated hydroxyanisole
1333-86-4	Carbon black
8007-45-2	Coal tar
14464-46-1	Cristobalite
1694-09-3	FD & C Violet No. 1
132-27-4	o-Phenylphenol, sodium salt
7758-01-2	Potassium bromate
81-07-2	Saccharin
128-44-9	Saccharin sodium
94-59-7	Safrole
79-34-5	1,1,2,2- Tetrachloroethane
1897-45-6	2,4,5,6-Tetrachloro isophthalonitrile (chlorothalonil)
List 4A	
12174-11-7	Attapulgite
9000-07-1	Carrageenan
LIST 4B	
14808-60-7	Silica, crystalline quartz

Inert Ingredients Listed as Toxic Chemicals Under Section 313 of the Superfund Amendments and Reauthorization Act (Toxic Release Inventory)

LIST 1	
50-00-0	Formaldehyde
123-31-9	Hydroquinone
108-95-2	Phenol
81-88-9	Rhodamine
LIST 2	
75-05-8	Acetonitrile
75-68-3	1-Chloro-1,1-difluoroethane
75-00-3	Chloroethane
95-48-7	o-Cresol
106-44-5	p-Cresol
108-39-4	m-Cresol
1319-77-3	Cresylic acid
110-82-7	Cyclohexane
84-74-2	Dibutyl phthalate
75-71-8	Dichlorodifluoromethane
75-43-4	Dichloromonofluoromethane
97-23-4	Dichlorophene
111-42-2	Diethanolamine
131-11-3	Dimethyl phthalate
100-41-4	Ethylbenzene
149-30-4	2-Mercaptobenzothiazole
108-10-1	Methyl isobutyl ketone
80-62-6	Methyl methacrylate
75-45-6	Monochlorodifluromethane
100-02-7	4-Nitrophenol
108-88-3	Toluene
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane
71-55-6	1,1,1-Trichloroethane
75-69-4	Trichlorofluoromethane
1330-20-7	Xylene
LIST 3	
107-18-6	Allyl alcohol
139-13-9	Aminotriethanoic acid
94-36-0	Benzoyl peroxide
35691-65-7	2-Bromo-2-(bromomethyl) pentanedinitrile
52-51-7	Bronopol
78-92-2	sec-Butanol
141-32-2	Butyl acrylate
989-38-8	C.I. Basic Red 1
3118-97-6	C.I. Solvent Orange 7
10049-04-4	Chlorine dioxide
98-82-8	Cumene
108-93-0	Cyclohexanol
78-88-6	2,3-Dichloro-1-propene
77-73-6	Dicyclopentadiene
124-40-3	Dimethylamine
107-21-1	1,2-Ethanediol
64-18-6	Formic acid
4080-31-3	Hexamethylenetetramine chloroallyl chloride
7647-01-0	Hydrogen chloride
55406-53-6	3-Iodo-2-propynyl butyl carbamate
80-05-7	4,4'-Isopropylidenediphenol
554-13-2	Lithium carbonate
108-31-6	Maleic anhydride
67-56-1	Methyl alcohol
78-93-3	Methyl ethyl ketone
872-50-4	N-Methyl-2-pyrrolidinone
79-11-8	Monochloroacetic acid
91-20-3	Naphthalene
132-27-4	o-Phenylphenol, sodium salt
7664-38-2	Phosphoric acid
85-44-9	Phthalic anhydride
88-89-1	Picric Acid
51-03-6	Piperonyl butoxide
7758-01-2	Potassium bromate
123-38-6	Propionaldehyde
81-07-2	Saccharin
94-59-7	Safrole
7632-00-0	Sodium nitrite
79-34-5	1,1,2,2- Tetrachloroethane
1897-45-6	2,4,5,6- Tetrachloro isophthalonitrile (chlorothalonil)
533-74-4	Tetrahydro-3,5-dimethyl-2H-1,3,5-thiadiazine-2-thione
76-06-2	Trichloronitromethane (chloropicrin)
121-44-8	Triethylamine
LIST 4B	
98-86-2	Acetophenone
71-36-3	1-Butanol
67-63-0	Isopropyl alcohol

Inert Ingredients Listed as Occupational Hazards under the Occupational Safety and Health Act

LIST 1	
50-00-0	Formaldehyde
123-31-9	Hydroquinone
78-59-1	Isophorone
108-95-2	Phenol
LIST 2	
75-05-8	Acetonitrile
111-76-2	Butyl cellosolve
75-00-3	Chloroethane
95-48-7	o-Cresol
106-44-5	p-Cresol
108-39-4	m-Cresol
1319-77-3	Cresylic acid
110-82-7	Cyclohexane
108-94-1	Cyclohexanone
84-74-2	Dibutyl phthalate
75-71-8	Dichlorodifluoromethane
75-43-4	Dichloromonofluoromethane
131-11-3	Dimethyl phthalate
100-41-4	Ethylbenzene
141-79-7	Mesityl oxide
108-10-1	Methyl isobutyl ketone
80-62-6	Methyl methacrylate
79-24-3	Nitroethane
75-52-5	Nitromethane
8052-41-3	Stoddard solvent
108-88-3	Toluene
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane
71-55-6	1,1,1-Trichloroethane
75-69-4	Trichlorofluoromethane
1330-20-7	Xylene
LIST 3	
123-86-4	Acetic acid, butyl ester
110-19-0	Acetic acid, isobutyl ester
67-64-1	Acetone
107-18-6	Allyl alcohol
7429-90-5	Aluminum (metal)
628-63-7	Amyl acetate
83-79-4	Barbasco (rotenone)
7727-43-7	Barium sulfate (1:1)
94-36-0	Benzoyl peroxide
1303-86-2	Boron oxide (B2O3)
75-65-0	tert-Butanol
78-92-2	sec-Butanol
76-22-2	Camphor
1333-86-4	Carbon black
124-38-9	Carbon dioxide
10049-04-4	Chlorine dioxide
14464-46-1	Cristobalite
98-82-8	Cumene
108-93-0	Cyclohexanol
123-42-2	Diacetone alcohol
109-89-7	Diethylamine
108-83-8	Diisobutyl ketone
124-40-3	Dimethylamine
141-43-5	Ethanolamine
107-15-3	Ethylenediamine
64-18-6	Formic acid
142-82-5	Heptane
7647-01-0	Hydrogen chloride
7722-84-1	Hydrogen peroxide
78-83-1	Isobutyl alcohol
108-21-4	Isopropyl acetate
75-31-0	Isopropylamine
108-31-6	Maleic anhydride
34590-94-8	(2-Methoxymethylethoxy) propanol
67-56-1	Methyl alcohol
78-93-3	Methyl ethyl ketone
110-43-0	Methyl n-amyl ketone
123-92-2	3-Methyl-1-butanol, acetate
110-12-3	5-Methyl-2-hexanone
101-68-8	1,1'-Methylenebis (4-isocyanatobenzene)
110-91-8	Morpholine
8030-30-6	Naphtha
91-20-3	Naphthalene
144-62-7	Oxalic acid
8012-95-1	Paraffin oils
115-77-5	Pentaerythritol
7664-38-2	Phosphoric acid
85-44-9	Phthalic anhydride
88-89-1	Picric Acid

74-98-6	Propane
10025-67-9	Sulfur chloride
7664-93-9	Sulfuric acid
14807-96-6	Talc
79-34-5	1,1,2,2-Tetrachloroethane
109-99-9	Tetrahydrofuran
76-06-2	Trichloronitromethane
121-44-8	Triethylamine
8006-64-2	Turpentine oil
25013-15-4	Vinyl toluene
7646-85-7	Zinc chloride
LIST 4A	
64-19-7	Acetic acid
9005-25-8	Cornstarch
56-81-5	Glycerin
7782-42-5	Graphite
13397-24-5	Gypsum
1332-58-7	Kaolin
1317-65-3	Limestone
LIST 4B	
1344-28-1	Aluminum oxide
71-36-3	1-Butanol
1305-62-0	Calcium hydroxide
1305-78-8	Calcium oxide
1344-95-2	Calcium silicate
7778-18-9	Calcium sulfate
9004-34-6	Cellulose
61790-53-2	Diatomaceous earth
64-17-5	Ethanol
141-78-6	Ethyl acetate
1309-37-1	Ferric oxide
67-63-0	Isopropyl alcohol
546-93-0	Magnesium carbonate
1309-48-4	Magnesium oxide
71-23-8	n-Propanol
112926-00-8	Silica gel, pptd., cryst.-free
60676-86-0	Silica, vitreous
1310-73-2	Sodium hydroxide
57-50-1	Sugar
13463-67-7	Titanium dioxide
1314-13-2	Zinc oxide
557-05-1	Zinc stearate

Inert Ingredients Listed as Hazardous by the Clean Air Act, the Clean Water Act, or the Safe Drinking Water Act

LIST 1	
117-84-0	Dioctyl phthalate
50-00-0	Formaldehyde
123-31-9	Hydroquinone
78-59-1	Isophorone
25154-52-3	Nonylphenol
108-95-2	Phenol
LIST 2	
75-05-8	Acetonitrile
85-68-7	Butyl benzyl phthalate
111-76-2	Butyl cellosolve
106-88-7	1,2-Butylene oxide
75-68-3	1-Chloro-1,1-difluoroethane
75-00-3	Chloroethane
95-48-7	o-Cresol
106-44-5	p-Cresol
108-39-4	m-Cresol
1319-77-3	Cresylic acid
110-82-7	Cyclohexane
108-94-1	Cyclohexanone
84-74-2	Dibutyl phthalate
27134-27-6	Dichloroaniline
75-71-8	Dichlorodifluoromethane
111-42-2	Diethanolamine
84-66-2	Diethyl phthalate
111-90-0	Diethylene glycol monoethyl ether
111-77-3	Diethylene glycol monomethyl ether
75-37-6	1,1-Difluoroethane
131-11-3	Dimethyl phthalate
100-41-4	Ethylbenzene
141-79-7	Mesityl oxide
108-10-1	Methyl isobutyl ketone
80-62-6	Methyl methacrylate
75-45-6	Monochlorodifluromethane
79-24-3	Nitroethane
75-52-5	Nitromethane
100-02-7	4-Nitrophenol
108-88-3	Toluene
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane
71-55-6	1,1,1-Trichloroethane
75-69-4	Trichlorofluoromethane
1330-20-7	Xylene
LIST 3	
123-86-4	Acetic acid, butyl ester
110-19-0	Acetic acid, isobutyl ester
141-97-9	Acetoacetic acid, ethyl ester
67-64-1	Acetone
74-86-2	Acetylene
124-04-9	Adipic acid
103-23-1	Adipic acid, bis(2-ethylhexyl) ester
107-18-6	Allyl alcohol
7429-90-5	Aluminum (metal)
111-41-1	2-[(Aminoethyl)amino]ethanol
1111-78-0	Ammonium carbamate
16919-19-0	Ammonium fluosilicate
1336-21-6	Ammonium hydroxide
1762-95-4	Ammonium thiocyanate
628-63-7	Amyl acetate
28300-74-5	Antimony potassium tartrate
1309-64-4	Antimony trioxide
100-52-7	Benzaldehyde
119-61-9	Benzophenone
100-51-6	Benzyl alcohol
106-97-8	n-Butane
107-88-0	1,3-Butanediol
78-92-2	sec-Butanol
141-32-2	Butyl acrylate
112-07-2	Butyl cellosolve acetate
107-92-6	Butyric acid
7778-54-3	Calcium hypochlorite
9004-57-3	Cellulose, ethyl ether
10049-04-4	Chlorine dioxide
106-43-4	4-Chlorotoluene
142-71-2	Copper acetate
3251-23-8	Copper nitrate
7758-98-7	Copper sulfate
98-82-8	Cumene
108-80-5	Cyanuric acid
108-93-0	Cyclohexanol
123-42-2	Diacetone alcohol
78-88-6	2,3-Dichloro-1-propene
109-89-7	Diethylamine
111-46-6	Diethylene glycol
26761-40-0	Diisodecyl phthalate
67-68-5	Dimethyl sulfoxide
124-40-3	Dimethylamine
25265-71-8	Dipropylene glycol
27176-87-0	Dodecylbenzenesulfonic acid
26264-06-2	Dodecylbenzenesulfonic acid, calcium salt
25155-30-0	Dodecylbenzenesulfonic acid, sodium salt
27323-41-7	Dodecylbenzenesulfonic acid, triethanolamine salt
27193-86-8	Dodecylphenol
74-84-0	Ethane
107-21-1	1,2-Ethanediol
122-51-0	Ethyl orthoformate
120-47-8	Ethyl p-hydroxybenzoate
107-15-3	Ethylenediamine
60-00-4	Ethylenediaminetetraacetic acid
10045-89-3	Ferrous ammonium sulfate
64-18-6	Formic acid
110-17-8	Fumaric acid
107-22-2	Glyoxal
100-97-0	Hexamethylenetetramine
7647-01-0	Hydrogen chloride
75-28-5	Isobutane
78-83-1	Isobutyl alcohol
26952-21-6	Isooctanol
78-78-4	Isopentane
121-91-5	Isophthalic acid
108-21-4	Isopropyl acetate
75-31-0	Isopropylamine
80-05-7	4,4'-Isopropylidenediphenol
110-16-7	Maleic acid
108-31-6	Maleic anhydride
6915-15-7	Malic acid
79-41-4	Methacrylic acid
67-56-1	Methyl alcohol
78-93-3	Methyl ethyl ketone
123-92-2	3-Methyl-1-butanol, acetate
101-68-8	1,1'-Methylenebis(4-isocyanatobenzene)
79-11-8	Monochloroacetic acid
110-91-8	Morpholine
91-20-3	Naphthalene
1338-24-5	Naphthenic acid
135-19-3	beta-Naphthol
504-60-9	1,3-Pentadiene
115-77-5	Pentaerythritol
71-41-0	1-Pentanol
7664-38-2	Phosphoric acid
85-44-9	Phthalic anhydride
85-41-6	Phthalimide
25791-96-2	Poly(oxypropylene) glycerol triether
9003-29-6	Polybutylene
7722-64-7	Potassium permanganate
74-98-6	Propane
123-38-6	Propionaldehyde
108-46-3	Resorcinol
69-72-7	Salicylic acid
7631-90-5	Sodium bisulfite
3926-62-3	Sodium chloroacetate
7775-11-3	Sodium chromate
7632-00-0	Sodium nitrite
10102-18-8	Sodium selenite
7664-93-9	Sulfuric acid
1401-55-4	Tannins
79-34-5	1,1,2,2- Tetrachloroethane
27193-28-8	(1,1,3,3-Tetramethylbutyl)phenol
104-15-4	p-Toluenesulfonic acid
121-44-8	Triethylamine
112-27-6	Triethylene glycol
25013-15-4	Vinyl toluene
7646-85-7	Zinc chloride
LIST 4A	
64-19-7	Acetic acid
56-81-5	Glycerin
LIST 4B	
108-24-7	Acetic anhydride
98-86-2	Acetophenone
10043-01-3	Aluminum sulfate
631-61-8	Ammonium acetate
1066-33-7	Ammonium bicarbonate
506-87-6	Ammonium carbonate
12125-02-9	Ammonium chloride
3012-65-5	Ammonium citrate, dibasic
65-85-0	Benzoic acid
71-36-3	1-Butanol
9004-32-4	Cellulose carboxymethyl ether, sodium salt
36653-82-4	Cetyl alcohol
112-30-1	1-Decanol
115-10-6	Dimethyl ether
7558-79-4	Disodium phosphate
64-17-5	Ethanol
141-78-6	Ethyl acetate
7705-08-0	Ferric chloride
10028-22-5	Ferric sulfate
7720-78-7	Ferrous sulfate
7782-63-0	Ferrous sulfate heptahydrate
7439-89-6	Iron (Fe)
25322-68-3	Polyethylene glycol
25322-69-4	Polypropylene glycol
1310-58-3	Potassium hydroxide
71-23-8	n-Propanol
79-09-4	Propionic acid
127-09-3	Sodium acetate
532-32-1	Sodium benzoate
7681-49-4	Sodium fluoride
10124-56-8	Sodium hexametaphosphate
1310-73-2	Sodium hydroxide
7758-29-4	Sodium tripolyphosphate
110-44-1	Sorbic acid
7601-54-9	Trisodium phosphate
3486-35-9	Zinc carbonate

Inert Ingredients That Are or Have Been Used as Active Ingredients in Pesticides

LIST 1	
50-00-0	Formaldehyde
108-95-2	Phenol
LIST 2	
111-76-2	Butyl cellosolve
88-04-0	4-Chloro-3,5-dimethylphenol
108-39-4	m-Cresol
1319-77-3	Cresylic acid
108-94-1	Cyclohexanone
84-74-2	Dibutyl phthalate
75-71-8	Dichlorodifluoromethane
97-23-4	Dichlorophene
111-77-3	Diethylene glycol monomethyl ether
131-11-3	Dimethyl phthalate
68602-80-2	Distillates (petroleum), C12-30 aromatic
68477-31-6	Distillates (petroleum), cat. reformer fractionator residue, l ow boiling
64742-54-7	Distillates (petroleum), hydrotreated heavy paraffinic
64742-55-8	Distillates (petroleum), hydrotreated light paraffinic
68476-30-2	Fuel oil, No. 2
149-30-4	2-Mercaptobenzothiazole
108-10-1	Methyl isobutyl ketone
100-02-7	4-Nitrophenol
64771-72-8	Paraffins (petroleum), normal C5-20
64742-94-5	Solvent naphtha (petroleum), heavy aromatic
64742-95-6	Solvent naphtha (petroleum), light aromatic
64742-88-7	Solvent naphtha (petroleum), medium aliphatic
8052-41-3	Stoddard solvent
108-88-3	Toluene
71-55-6	1,1,1-Trichloroethane
75-69-4	Trichlorofluoromethane
102-71-6	Triethanolamine
1330-20-7	Xylene
LIST 3	
67-64-1	Acetone
828-00-2	6-Acetoxy-2,4-dimethyl-m-dioxane
68131-40-8	Alcohols, C11-15-secondary, ethoxylated
68603-15-6	Alcohols, C6-12
97-59-6	Allantoin
107-18-6	Allyl alcohol
7429-90-5	Aluminum (metal)
68140-00-1	Amides, coco, N-(hydroxyethyl)-
68603-42-9	Amides, coco, N,N-bis(2-hydroxyethyl)
7784-25-0	Ammonium alum
16919-19-0	Ammonium fluosilicate
544-60-5	Ammonium oleate
628-63-7	Amyl acetate
104-46-1	p-Anethole
28300-74-5	Antimony potassium tartrate
8052-42-4	Asphalt
83-79-4	Barbasco (rotenone)
513-77-9	Barium carbonate
100-52-7	Benzaldehyde
60-12-8	Benzeneethanol
2634-33-5	1,2-Benzisothiazolin-3-one
94-09-7	Benzocaine
120-51-4	Benzyl benzoate
5437-45-6	Benzyl bromoacetate
1214-39-7	N6-Benzyladenine
71786-60-2	N,N-Bis(2-hydroxyethyl)-C12-18-alkylamine
120-40-1	N,N-Bis(2-Hydroxyethyl) dodecanamide
26635-93-8	N,N'-Bis(polyoxyethylene) oleylamine
26635-92-7	N,N'-Bis(polyoxyethylene) stearylamine
1303-96-4	Borax
12179-04-3	Boric acid (H2B4O7), disodium salt, pentaborate
10043-35-3	Boric acid(H3BO3)
35691-65-7	2-Bromo-2-(bromomethyl) pentanedinitrile
52-51-7	Bronopol
107-88-0	1,3-Butanediol
78-92-2	sec-Butanol
9003-13-8	Butoxypolypropylene glycol
94-26-8	Butyl p-hydroxybenzoate
128-37-0	Butylated hydroxytoluene
98-54-4	p-tert-Butylphenol
2650-18-2	C.I. Acid Blue 9, diammonium salt
1934-21-0	C.I. Acid Yellow 23, trisodium salt
10137-74-3	Calcium chlorate
7778-54-3	Calcium hypochlorite
12168-85-3	Calcium oxide silicate
4075-81-4	Calcium propionate
10124-41-1	Calcium thiosulfate
76-22-2	Camphor
334-48-5	Capric acid
124-38-9	Carbon dioxide
8001-78-3	Castor oil, hydrogenated
8007-20-3	Cedarleaf oil
56-95-1	Chlorhexidine diacetate
10049-04-4	Chlorine dioxide
104-55-2	Cinnamaldehyde
8007-45-2	Coal tar
61789-51-3	Cobalt naphthenate
61789-18-2	Coco alkyltrimethyl quaternary ammonium chlorides
1184-64-1	Copper carbonate
20427-59-2	Copper hydroxide
12069-69-1	Copper hydroxy carbonate
1338-02-9	Copper naphthenate
3251-23-8	Copper nitrate
7758-98-7	Copper sulfate
527-09-3	Cupric gluconate
1317-39-1	Cuprous oxide
108-80-5	Cyanuric acid
36445-71-3	Decyl phenoxybenzene disulfonic acid, disodium salt
1322-98-1	Decylbenzenesulfonic acid, sodium salt
51344-62-8	Dehydroabietylamine-ethylene oxide condensate (1:2)
3734-33-6	Denatonium benzoate
123-42-2	Diacetone alcohol
78-88-6	2,3-Dichloro-1-propene
108-83-8	Diisobutyl ketone
121-54-0	p- Diisobutylphenoxyethoxyethyl dimethyl benzyl ammonium chloride
78-66-0	3,6-Dimethyl-4-octyne-3,6-diol
28804-88-8	Dimethylnaphthalene
6440-58-0	Dimethylol-5,5-dimethylhydantoin
51200-87-4	4,4-Dimethyloxazolidine
25265-71-8	Dipropylene glycol
7575-62-4	Disodium 4-dodecyl-2,4'-oxydibenzenesulfonate
139-33-3	Disodium ethylenediaminetetraacetate
53404-45-8	Disodium monoethanolamine phosphate
12008-41-2	Disodium octaborate
12280-03-4	Disodium octaborate, tetrahydrate
1330-43-4	Disodium tetraborate
112-53-8	1-Dodecanol
2235-54-3	Dodecyl sulfate, ammonium salt
3097-08-3	Dodecyl sulfate, magnesium salt
151-21-3	Dodecyl sulfate, sodium salt
27176-87-0	Dodecylbenzenesulfonic acid
26545-53-9	Dodecylbenzenesulfonic acid, diethanolamine salt
26836-07-7	Dodecylbenzenesulfonic acid, monoethanolamine salt
27177-77-1	Dodecylbenzenesulfonic acid, potassium salt
25155-30-0	Dodecylbenzenesulfonic acid, sodium salt
27323-41-7	Dodecylbenzenesulfonic acid, triethanolamine salt
68911-49-9	Dried blood
8022-96-6	Essential Oils
107-21-1	1,2-Ethanediol
141-43-5	Ethanolamine
104-28-9	2-Ethoxyethyl p-methoxycinnamate
51344-60-6	Ethoxylated abietylamine
9004-87-9	Ethoxylated isooctylphenol
61790-81-6	Ethoxylated lanolin
11096-42-7	Ethoxylated nonylphenol complex with Iodine
104-76-7	2-Ethyl-1-hexanol
78-21-7	4-Ethyl-4hexadecyl morpholinium, ethyl sulfate
10096-64-7	4-Ethyl-4octadecyl morpholinium, ethyl sulfate
107-15-3	Ethylenediamine
60-00-4	Ethylenediaminetetraacetic acid
64-02-8	Ethylenediaminetetraacetic acid, tetrasodium salt
17572-97-3	Ethylenediaminetetraacetic acid, tripotassium salt
1070-03-7	2-Ethylhexyl dihydrogen phosphate
10045-89-3	Ferrous ammonium sulfate
16423-68-0	Fluorescein, 2',4',5',7'-tetraiodo, disodium salt {Spiro (isobenzo furan) tautomeric form }
110-17-8	Fumaric acid
77-06-5	Gibberellic acid
526-95-4	D-Gluconic acid
111-30-8	Glutaraldehyde
79-14-1	Glycolic acid
2836-32-0	Glycolic acid, sodium salt
9000-28-6	Gum Ghatti
4080-31-3	Hexamethylenetetramine chloroallyl chloride
51229-78-8	Hexamethylenetetramine chloroallyl chloride, cis isomer
107-41-5	Hexylene glycol
7647-01-0	Hydrogen chloride
10034-85-2	Hydrogen iodide
7722-84-1	Hydrogen peroxide
27136-73-8	1-(2-Hydroxyethyl)-2-(heptadecenyl)imidazoline
52299-20-4	2-[(Hydroxymethyl)amino]-2-methyl propanol
134-31-6	8-Hydroxyquinoline sulfate
68527-99-1	1H-Imidazolium, 1,3-bis(carboxymethyl)-4,5-dihydro-1-(2-hydroxyethyl)-2-undecyl-, dihydroxide, disodium salt
55406-53-6	3-Iodo-2-propynyl butyl carbamate
125-12-2	Isobornyl acetate
108-21-4	Isopropyl acetate
63393-93-1	Isopropyl lanolin
110-27-0	Isopropyl myristate
2682-20-4	3(2H)-Isothiazolone, 2-methyl-
26172-55-4	3(2H)-Isothiazolone, 5-chloro-2-methyl-
61789-91-1	Jojoba bean oil
8013-10-3	Juniper tar oil
8008-20-6	Kerosene (deodorized)
8006-54-0	Lanolin
8032-32-4	Ligroine
138-86-3	alpha-Limonene
78-70-6	Linalyl alcohol
135-19-3	beta-Naphthol
9004-70-0	Nitrocellulose
112-05-0	Nonanoic acid
106-24-1	2,6-Octadien-1-ol, 3,7-dimethyl-, (E)-
111-87-5	1-Octanol
8007-70-3	Oil of anise
8008-51-3	Oil of camphor
8000-27-9	Oil of Cedarwood
8000-29-1	Oil of citronella
8007-02-1	Oil of lemongrass
68443-05-0	Oleic acid, sulfonated, sodium salt
8050-07-5	Olibanum deriv.
8008-57-9	Orange oil

144-62-7	Oxalic acid
59720-42-2	1H,3H,5H-Oxazolo[3,4-c]oxazole, methanol deriv.
56709-13-8	1H,3H,5H-Oxazolo[3,4-c]oxazole, poly(oxymethylene)
6542-37-6	1H,3H,5H-Oxazolo[3,4-c]oxazole-7a,(7H)-methanol
8012-95-1	Paraffin oils
8007-44-1	Pennyroyal oil
140-01-2	Pentasodium diethylene triaminepentaacetate
64742-16-1	Petroleum resins
68608-26-4	Petroleum sulfonic acids, sodium salts
132-27-4	o-Phenylphenol, sodium salt
7664-38-2	Phosphoric acid
8011-48-1	Pine tar
51-03-6	Piperonyl butoxide
9003-29-6	Polybutylene
9003-27-4	Polyisobutylene
9003-39-8	Polyvinylpyrrolidone
298-14-6	Potassium bicarbonate
7646-93-7	Potassium bisulfate
7681-11-0	Potassium iodide (KI)
13429-27-1	Potassium myristate
7757-79-1	Potassium nitrate
7722-64-7	Potassium permanganate
7492-30-0	Potassium ricinoleate
68424-85-1	Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl, chlorides
68391-01-5	Quaternary ammonium compounds, benzyl-C12-18-alkyldimethyl, chlorides
61789-77-3	Quaternary ammonium compounds, di(coco alkyl)dimethyl, chlorides
68153-33-3	Quaternary ammonium compounds, di-C10-16-alkyldimethyl, chlorides
73398-64-8	Quaternary ammonium compounds, di-C8-18-alkyldimethyl, chlorides
59-40-5	N-(2-Quinoxalinyl)sulfanilide
65997-05-9	Rosin, partially dimerized
15662-33-6	Ryanodine
69-72-7	Salicylic acid
6834-92-0	Silicic acid (H2SiO3), disodium salt
61789-31-9	Soap, coconut oil
7631-90-5	Sodium bisulfite
7775-09-9	Sodium chlorate
7775-11-3	Sodium chromate
53404-78-7	Sodium di(monoethanolamine) phosphate
126-96-5	Sodium diacetate
17421-79-3	Sodium ethylenediamine tetraacetate
16893-85-9	Sodium fluosilicate
7775-19-1	Sodium metaborate
7632-00-0	Sodium nitrite
7757-83-7	Sodium sulfite
61791-34-2	N-(Soya alkyl)-N-ethylmorpholinium ethylsulfate
57-11-4	Stearic acid
5329-14-6	Sulfamic acid
8002-33-3	Sulfated castor oil
7664-93-9	Sulfuric acid
7704-34-9	Sulphur
1401-55-4	Tannins
98-55-5	alpha-Terpineol
79-34-5	1,1,2,2-Tetrachloroethane
1897-45-6	2,4,5,6Tetrachloro isophthalonitrile (chlorothalonil)
533-74-4	Tetrahydro-3,5-dimethyl-2H-1,3,5-thiadiazine-2-thione
27193-28-8	(1,1,3,3-Tetramethylbutyl)phenol
7320-34-5	Tetrapotassium pyrophosphate
89-83-8	Thymol
104-15-4	p-Toluenesulfonic acid
30526-22-8	Toluenesulfonic acid, potassium salt
12068-03-0	Toluenesulfonic acid, sodium salt
76-06-2	Trichloronitromethane (chloropicrin)
27519-02-4	(Z)-9-Tricosene
139-96-8	Triethanolamine lauryl sulfate
2717-15-9	Triethanolamine oleate
112-27-6	Triethylene glycol
122-20-3	Triisopropanolamine
139-08-2	Trimethyl tetradecylphenyl ammonium chloride
75673-43-7	3,4,4-Trimethyloxazolidine
150-38-9	Trisodium ethylenediaminetetraacetate
139-89-9	Trisodium N-(2-hydroxyethyl) ethylenediaminetriacetate
5064-31-3	Trisodium nitrilotriacetate
8006-64-2	Turpentine oil
1300-72-7	Xylenesulfonic acid, sodium salt
7646-85-7	Zinc chloride
7440-66-6	Zinc (metallic)
12001-85-3	Zinc naphthenate
68813-94-5	Zinc sulfate, basic
7446-19-7	Zinc sulfate, monohydrate
LIST 4A	
143-18-0	Potassium oleate
LIST 4B	
64-19-7	Acetic acid
77-92-9	Citric acid
9004-53-9	Dextrin
56-81-5	Glycerin
8001-26-1	Linseed oil
7727-37-9	Nitrogen
9002-88-4	Polyethylene
144-55-8	Sodium bicarbonate
7647-14-5	Sodium chloride
8001-22-7	Soybean oil
7446-70-0	Aluminum chloride
10043-01-3	Aluminum sulfate
506-87-6	Ammonium carbonate
7783-20-2	Ammonium sulfate
65-85-0	Benzoic acid
61791-31-9	N,N-Bis(2-hydroxyethyl)(coconut oil alkyl)amine
10043-52-4	Calcium chloride
1305-62-0	Calcium hydroxide
1305-78-8	Calcium oxide
7778-18-9	Calcium sulfate
7440-44-0	Carbon
8001-79-4	Castor oil
9004-32-4	Cellulose carboxymethyl ether, sodium salt
36653-82-4	Cetyl alcohol
8001-31-8	Coconut oil
112-30-1	1-Decanol
7722-88-5	Diphosphoric acid, tetrasodium salt
7558-79-4	Disodium phosphate
9004-82-4	Dodecanol, ethoxylated, monoether with sulfuric acid, sodium salt
64-17-5	Ethanol
91-53-2	Ethoxyquin
141-78-6	Ethyl acetate
10028-22-5	Ferric sulfate
7782-63-0	Ferrous sulfate heptahydrate
111-27-3	1-Hexanol
120-72-9	1H-Indole
67-63-0	Isopropyl alcohol
7786-30-3	Magnesium chloride
7487-88-9	Magnesium sulfate
99-76-3	Methyl p-hydroxybenzoate
124-07-2	Octanoic acid
112-80-1	Oleic acid
7778-53-2	Phosphoric acid, tripotassium salt
8002-09-3	Pine oil
80-56-8	alpha-Pinene
9005-08-7	Polyoxyethylene distearate
8050-33-7	Polyoxyethylene ester of rosin
9016-45-9	Polyoxyethylene nonylphenol
9005-64-5	Polyoxyethylene sorbitan monolaurate
9005-65-6	Polyoxyethylene sorbitan monooleate
25322-69-4	Polypropylene glycol
584-08-7	Potassium carbonate
61789-30-8	Potassium coconut oil soap
1310-58-3	Potassium hydroxide
67701-09-1	Potassium salts of fatty acids (C8-18 and C18 unsatd.)
24634-61-5	Potassium sorbate
71-23-8	n-Propanol
79-09-4	Propionic acid
94-13-3	Propyl p-hydroxybenzoate
57-55-6	Propylene glycol
8008-74-0	Sesame seed oil
63231-67-4	Silica Gel
7631-86-9	Silicon dioxide
67701-10-4	Soap: (Fatty acids, C8-18 and C18-unsatd., sodium salts)
532-32-1	Sodium benzoate
577-11-7	Sodium bis(2-ethylhexyl) sulfosuccinate
7681-38-1	Sodium bisulfate
7647-15-6	Sodium bromide
497-19-8	Sodium carbonate
7558-80-7	Sodium dihydrogen phosphate
1639-66-3	Sodium dioctyl sulfosuccinate
7681-49-4	Sodium fluoride
10124-56-8	Sodium hexametaphosphate
1310-73-2	Sodium hydroxide
7631-99-4	Sodium nitrate
143-19-1	Sodium oleate
137-40-6	Sodium propionate
533-96-0	Sodium sesquicarbonate
1344-09-8	Sodium silicate
7757-82-6	Sodium sulfate
7758-29-4	Sodium tripolyphosphate
110-44-1	Sorbic acid
7601-54-9	Trisodium phosphate
57-13-6	Urea
1314-13-2	Zinc oxide
557-05-1	Zinc stearate

APPENDIX C: REPORTED USE OF INERTS IN CALIFORNIA

Reported Use of Inert Ingredients in California in 1995
(Listed in order of amount used)

By County

County	pounds used
Fresno	25,268,662
Kern	21,484,492
Tulare	9,739,869
Imperial	9,290,355
Kings	8,498,790
Merced	5,998,895
Colusa	5,843,146
Butte	4,742,179
Sutter	4,732,556
Riverside	4,653,614
Monterey	4,511,378
San Joaquin	4,400,866
Yolo	3,951,056
Glenn	3,679,373
Sacramento	3,574,439
Madera	3,205,913
Stanislaus	2,882,010
Ventura	2,613,462
Santa Barbara	2,589,546
San Diego	2,148,509
Yuba	1,891,345
Orange	1,716,613
Los Angeles	1,665,679
Solano	1,397,203
Santa Clara	1,098,175
San Luis Obispo	1,046,773
Placer	901,637
Contra Costa	899,829
Santa Cruz	853,990
Sonoma	835,857
Lake	824,197
San Bernadino	718,800
Mendocino	711,859
Alameda	554,873
Tehama	509,587
Siskiyou	465,259
San Benito	370,178
Napa	318,418
San Mateo	298,801
Del Norte	271,392
Modoc	266,587
Shasta	196,411
Ed Dorado	165,986
Marin	126,320
Calaveras	111,882
Amador	79,612
San Francisco	62,242
Humboldt	61,809
Nevada	51,770
Tuolumne	43,036
Lassen	24,640
Mono	21,386
Mariposa	15,409
Plumas	14,705
Inyo	3,323
Sierra	1,432
Trinity	333
Alpine	288
Total	**152,406,746**

By Type of Use

Type of Use	pounds used
Cotton	32,876,448
Rice	17,796,586
Grapes	10,295,909
Tomato	9,517,747
Alfalfa	8,602,419
Carrots	8,206,406
Structural Pest Control	6,481,458
Almond	5,916,091
Landscape Maintenance	5,735,732
Orange	3,876,510
Rights Of Way	3,376,187
Potato	3,143,594
Lettuce	2,963,901
Walnut	2,686,791
Broccoli	1,668,837
Nursery & Greenhouse Products	1,655,110
Sugarbeet	1,511,566
Peach	1,393,529
Lemon	1,294,734
Strawberry	1,215,910
Corn	1,191,420
Pear	1,173,995
Soil Application	1,103,198
Cantaloupe	1,058,738
Onion	983,243
Prune	891,938
Peppers- Bell	844,724
Apple	841,915
Nectarine	819,186
Public Health Pest Control	752,316
Wheat	723,678
Beans	718,213
Uncultivated Areas	710,813
Plum	636,865
Celery	614,046
Pistachio	507,342
Sweet Potato	457,404
Date	426,555
Watermelons	382,098
Artichoke	359,048
Safflower	350,668
Cauliflower	349,787
Forestlands	327,502
Cherry	312,323
Wood Protection Treatments	298,856
Brussels Sprouts	270,312
Melons	255,440
Spinach	231,837
Olive	229,547
Cabbage	214,004
Vertebrate Pest Control	211,769
Barley	211,596
Apricot	193,922
Asparagus	189,619
Parsley	185,015
Grapefruit	155,557
Sunflower	149,716
Garlic	149,221
Citrus fruits	121,349
Bermuda Grass	120,110
Peppers-Chili Type	118,896
Raspberry	110,538
Ornamental Turf	109,202
Cucumber	108,456
Avocado	108,057
Oats	103,424
Tangerine	96,390
Vegetables-Unspecified	91,215
Animal Husbandry	91,177
Sorghum	86,011
Rangeland	72,795
Squash	71,345
Bokchoy	66,687
Aquatic Areas	65,038
Mustard	64,065
Gailon	63,667
Chicory	58,400
Food Processing	47,158
Swimming Pools	47,145
Fruits - Dried	46,216
Leafy Vegetables	45,874
Regulatory Pest Control	45,768
Kale	45,548
Clover	43,699
Commodity fumigation	39,037
Chinese Cabbage	34,876
Collards	34,003
Sudangrass	33,289
Fig	32,426
Beets	30,175
Mushrooms	29,611
Swisschard	28,179
Fumigation	27,338
Pastures	22,867
Turnip	21,997
Kiwifruit	21,712
Poultry	20,910
Peas	19,546
Cilantro	17,755
Anise	16,852
Blackberry	16,292
Pumpkin	14,856
Basil	14,564
Research Commodity	13,356
Parsnip	12,696
Radish	11,830
Eggplant	9,827
Antifouling Treatment Sites	9,666
Pomegranate	9,187
Pecan	9,159
Dill	8,586
Flavoring And Spices	8,146
Endive	8,043
Leek	5,920
Rape	5,904
Broccoliraab	5,809
Boysenberry	5,285
Forage Fodder Grasses	5,063
Persimmon	5,013
Commercial, institutional and industrial areas	4,948
Christmas Tree Plantations	3,894
Irrigation Systems	3,570
Fennel	2,889
Human Drinking Water Systems	2,778
Dandelion	2,658
Chinese Greens	2,390
Mint	2,387
Grasses Grown For Seed	2,286
Lime	1,952
Tarragon	1,677
Quince	1,607
Rye	1,295
Beehives	1,203
Chive	1,115
Farm Animals	1,102
Gaichoy	1,087
Orchards-Unspecified	1,043

* Only uses of over 1,000 pounds per year are listed in this table.

Reported Use of Inert Ingredients in California in 1995
(Listed in alphabetical order)

By County

County	pounds used
Alameda	554,873
Alpine	288
Amador	79,612
Butte	4,742,179
Calaveras	111,882
Colusa	5,843,146
Contra Costa	899,829
Del Norte	271,392
Ed Dorado	165,986
Fresno	25,268,662
Glenn	3,679,373
Humboldt	61,809
Imperial	9,290,355
Inyo	3,323
Kern	21,484,492
Kings	8,498,790
Lake	824,197
Lassen	24,640
Los Angeles	1,665,679
Madera	3,205,913
Marin	126,320
Mariposa	15,409
Mendocino	711,859
Merced	5,998,895
Modoc	266,587
Mono	21,386
Monterey	4,511,378
Napa	318,418
Nevada	51,770
Orange	1,716,613
Placer	901,637
Plumas	14,705
Riverside	4,653,614
Sacramento	3,574,439
San Benito	370,178
San Bernadino	718,800
San Diego	2,148,509
San Francisco	62,242
San Joaquin	4,400,866
San Luis Obispo	1,046,773
San Mateo	298,801
Santa Barbara	2,589,546
Santa Clara	1,098,175
Santa Cruz	853,990
Shasta	196,411
Sierra	1,432
Siskiyou	465,259
Solano	1,397,203
Sonoma	835,857
Stanislaus	2,882,010
Sutter	4,732,556
Tehama	509,587
Trinity	333
Tulare	9,739,869
Tuolumne	43,036
Ventura	2,613,462
Yolo	3,951,056
Yuba	1,891,345
Total	**152,406,746**

By Type of Use

Type of Use	pounds used
Alfalfa	8,602,419
Almond	5,916,091
Animal Husbandry	91,177
Anise	16,852
Antifouling Treatment	9,666
Apple	841,915
Apricot	193,922
Aquatic Areas	65,038
Artichoke	359,048
Asparagus	189,619
Avocado	108,057
Barley	211,596
Basil	14,564
Beans	718,213
Beehives	1,203
Beets	30,175
Bermuda Grass	120,110
Blackberry	16,292
Bokchoy	66,687
Boysenberry	5,285
Broccoli	1,668,837
Broccoliraab	5,809
Brussels Sprouts	270,312
Cabbage	214,004
Cantaloupe	1,058,738
Carrots	8,206,406
Cauliflower	349,787
Celery	614,046
Cherry	312,323
Chicory	58,400
Chinese Cabbage	34,876
Chinese Greens	2,390
Chive	1,115
Christmas Tree Plantations	3,894
Cilantro	17,755
Citrus fruits	121,349
Clover	43,699
Collards	34,003
Commercial, institutional, and industrial areas	4,948
Commodity fumigation	39,037
Corn	1,191,420
Cotton	32,876,448
Cucumber	108,456
Dandelion	2,658
Date	426,555
Dill	8,586
Eggplant	9,827
Endive	8,043
Farm Animals	1,102
Fennel	2,889
Fig	32,426
Flavoring And Spices	8,146
Food Processing	47,158
Forage Fodder Grass	5,063
Forestlands	327,502
Fruits - Dried	46,216
Fumigation	27,338
Gaichoy	1,087
Gailon	63,667
Garlic	149,221
Grapefruit	155,557
Grapes	10,295,909
Grasses Grown For Seed	2,286
Human Drinking Water Systems	2,778
Irrigation Systems	3,570
Kale	45,548
Kiwifruit	21,712
Landscape Maintenance	5,735,732
Leafy Vegetables	45,874
Leek	5,920
Lemon	1,294,734
Lettuce	2,963,901
Lime	1,952
Melons	255,440
Mint	2,387
Mushrooms	29,611
Mustard	64,065
Nectarine	819,186
Nursery & Greenhouse	1,655,110
Oats	103,424
Olive	229,547
Onion	983,243
Orange	3,876,510
Orchards-Unspecified	1,043
Ornamental Turf	109,202
Parsley	185,015
Parsnip	12,696
Pastures	22,867
Peach	1,393,529
Pear	1,173,995
Peas	19,546
Pecan	9,159
Peppers- Bell	844,724
Peppers-Chili Type	118,896
Persimmon	5,013
Pistachio	507,342
Plum	636,865
Pomegranate	9,187
Potato	3,143,594
Poultry	20,910
Prune	891,938
Public Health Pest Control	752,316
Pumpkin	14,856
Quince	1,607
Radish	11,830
Rangeland	72,795
Rape	5,904
Raspberry	110,538
Regulatory Pest Control	45,768
Research Commodity	13,356
Rice	17,796,586
Rights Of Way	3,376,187
Rye	1,295
Safflower	350,668
Soil Application	1,103,198
Sorghum	86,011
Spinach	231,837
Squash	71,345
Strawberry	1,215,910
Structural Pest Control	6,481,458
Sudangrass	33,289
Sugarbeet	1,511,566
Sunflower	149,716
Sweet Potato	457,404
Swimming Pools	47,145
Swisschard	28,179
Tangerine	96,390
Tarragon	1,677
Tomato	9,517,747
Turnip	21,997
Uncultivated Areas	710,813
Vegetables-Unspecified	91,215
Vertebrate Pest Control	211,769
Walnut	2,686,791
Watermelons	382,098
Wheat	723,678
Wood Protection Treatments	298,856

* Only uses of over 1,000 pounds per year are listed in this table.